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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/805,238	03/22/2004	Takeshi Kijima	119169	9039
25944	7590	05/25/2006	EXAMINER	
OLIFF & BERRIDGE, PLC P.O. BOX 19928 ALEXANDRIA, VA 22320			SMITH, BRADLEY	
			ART UNIT	PAPER NUMBER
			2891	

DATE MAILED: 05/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/805,238

Applicant(s)

KIJIMA ET AL.

Examiner

Bradley K. Smith

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 March 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 3/22/04 10/04/05

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The examiner does not understand how crystal nuclei could be formed over the substrate in an island pattern by sputtering. Sputtering is not a selective method of deposition, so how could it form an island pattern. The island pattern will not be addressed with respect to the prior art.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3-7, and 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Summerfelt in view of Wolf (Silicon Processing for the VLSI Era Volume 1: Process Technology pp 335 and 375) . Summerfelt (US 6,117,689) discloses a method of manufacturing an electrode by forming initial crystal nuclei **70** of an

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electrode material over a substrate **30** in an island pattern [Figure 11b], forming grown layers of the electrode material by causing the initial crystal nuclei to be grown [column 9, lines 1-10], where the substrate temperature is higher in the first step than in the second step [column 9, lines 20-30].

Regarding claim 3, Summerfelt discloses a method of manufacturing an electrode by forming by sputtering [column 3, line 30] initial crystal nuclei **70** of an electrode material over a substrate **30** in an island pattern [Figure 11b] and forming grown layers by evaporation [column 6, line 25] of the electrode material by causing the initial crystal nuclei to be grown [column 9, lines 1-10]. Summerfelt does not discuss the energy of the particles during these growth processes, but the applicant discloses in the specification [0069] that sputtering forms particles with an inherently higher energy than evaporation. Therefore, Summerfelt inherently discloses a method where the first growth process (sputtering) forms particles with a higher energy than the second growth process (evaporation).

Regarding claim 5, Summerfelt further discloses forming a plurality of stacked electrodes by repeating the growth steps [column 2, lines 10-20].

Regarding claim 6, Summerfelt further discloses performing a heat treatment [column 10, line 61].

Regarding claim 7, Summerfelt further discloses forming an electrode of platinum (Pt) [column 7, line 45].

Regarding claims 10 – 12, it is noted that product-by-process claims are not limited to the manipulations of the recited steps, only the structure implied by the steps. “[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.” In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). Since Summerfelt discloses the electrode, ferroelectric memory, and semiconductor device [column 2, lines 60-65] as claimed in claims 10 – 12, the claimed devices are not patentably distinct from those of Summerfelt.

However Summerfelt fails to disclose sputter deposition and then evaporation. Wolf disclose that sputter deposition and evaporative deposition are well known in the art. Furthermore Wolf details how sputter deposition can be used form uniform thicknesses and step coverage can be controlled but can be slow. Also Wolf detail how evaporative deposition is good for depositing pure metals and can be fast. Therefore it would be obvious to one of ordinary skill in the art at the time the invention was made to combine Summerfelt and Wolf, because the sputter process would deposit uniform nuclei and the evaporative sputtering would quickly deposit a pure grown layer.

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Summerfelt and Wolf in further view of Norga *et al.*

Summerfelt teaches a two step growth method where the first step is performed at 600 °C and the second step is performed at a lower temperature than the first step [column 9, line 25], but does not discuss a second temperature lower than 200 °C.

Norga *et al.* (US 6,545,856) teaches a second growth step with a temperature lower than 200 °C [column 9, lines 55-65]. It would have been obvious to one of ordinary skill in the art to use the second temperature of Norga *et al.* in the method of Summerfelt since Summerfelt teaches that this temperature would prevent the growth of many small grains which allows oxygen diffusion through the electrode material [column 2, lines 20-40].

1. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Summerfelt and Wolf in further view of Basceri *et al.*

Summerfelt teaches a diffusion barrier layer 42, but does not discuss forming the layer after forming the electrode material with ruthenium (Ru), ruthenium oxide (RuO₂), hafnium oxide (HfO₂), or aluminum oxide (Al₂O₃). Basceri *et al.* (US 6,534,357) teaches a diffusion barrier layer over an electrode material formed of the claimed species [column 5, lines 40-45]. It would have been obvious to one of ordinary skill in the art to use the diffusion barrier layer of Basceri *et al.* in the method of Summerfelt since this layer prevents oxygen permeation to the electrode material [column 5, lines 50-55].

Response to Arguments

Applicant's arguments with respect to claims 1-12 have been considered but are moot in view of the new ground(s) of rejection.

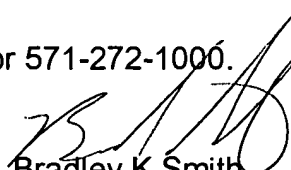
Conclusion

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bradley K. Smith whose telephone number is 571-272-1884. The examiner can normally be reached on 10-6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bill Baumeister can be reached on 571-272-1722. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Bradley K Smith
Primary Examiner
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